U.S. COAST GUARD

U.S. Coast Guard Aviation History

Sikorsky HO2S-1 / HO3S-1G "Dragonfly"

Historical Information:

Igor Sikorsky designed what would become the two-seat R-5 helicopter (civilian versions were designated the S-51) in response to a USAAF specification for a large observation helicopter. The USAAF interest was in part a response to the success of Sikorsky's R-4, which was designated by the military as the HNS-1 and was tested extensively by the Coast Guard under the expert guidance of Coast Guard helicopter pioneer CDR Frank Erickson--the Coast Guard's first helicopter pilot.

Sikorsky Aircraft built about 65 R-5s, of various versions, for the USAAF, Navy, and Coast Guard. The first two examples tested by the Navy were designated HO2S-1, while the remainder of the Navy/Coast Guard R-5 derivations were designated the HO3S-1. The prototype first flew in August of 1943 while the first HO3Ss were delivered to the Coast Guard in August of 1946.

These helicopters had a three-blade articulated rotor and the blades could be folded back so that the helicopter could be transported by a cargo aircraft virtually anywhere. Each of the HO3S-1G was fitted with a rescue hoist and the Coast Guard's Rotary Wing Development Unit based out of Elizabeth City, N.C., experimented with a number of other innovations that enhanced the helicopters' versatility, including a rescue basket and emergency flotation bags that were fitted around the landing gear. The size of the rescue basket, however, and the limited room within the HO3S's cabin precluded its use until the introduction of a larger helicopter. The team also developed a "Wobble Plate Stabilizer" which consisted of a small wing mounted on and behind the non-rotating portion of the wobble plate and served primarily as a means of trimming the inherent control forces and damping any displacements occurring during flight.

Based out of Elizabeth City and later New Orleans, among other air stations, the HO3S-1G demonstrated the helicopter's utility in search and rescue operations, eclipsing the role of fixed-wing amphibious aircraft. CDR Erickson, the Coast Guard's premiere supporter of rotary-winged aviation, along with his Rotary Wing Development Unit, used both the HO3S and the HTL-1 in many rescues that proved the value of this new type of aircraft for Coast Guard operations. Although their emphasis was on search and rescue, Erickson also demonstrated the helicopter's usefulness in combined cutter and helicopter operations, guiding ships through ice fields, conducting law enforcement patrols and the transportation of personnel and equipment.

LT Stewart Graham was a pioneer in the development of the helicopter for the Coast Guard and Navy as well. He flew the Coast Guard's HO2S-1 (BuNo 75690) during tests for the Navy of the Hayes XCF "dipping" sonar in March of 1946. These tests proved the feasibility of using helicopters, carrying dipping sonars, as anti-submarine aircraft. LT Graham and his crew slung an inflated life raft under the helicopter's fuselage for emergency flotation in case of power failure! The test also involved the captured U-2513--which was significantly more quiet than the U.S. fleet submarine used during the tests--leading the Navy to order the removal of all deck-mounted weaponry and material from every fleet submarine still in commission.

This pioneering aircraft proved the value of rotary-winged aircraft to the service and even set a world record. On 6 April 1949, a Coast Guard HO3S-1G, CG No. 234, piloted by the ubiquitous LT Graham, completed the longest unescorted helicopter ferry flight on record. The flight took place from Elizabeth City, North Carolina to Port Angeles, Washington, via San Diego, California. The total distance of the flight was 3,750 miles and took 10 and a half days to complete and involved a total flight time of 57.6 hours. Steward was accompanied by Aviation Machinist Mate Robert R. McAuliff.

"HO3S-1G (Sikorsky) helicopter taken 28 -29 April 1951 shown hoisting signal flags during American Helicopter Society Show at Anacostia and on Haines Point, Washington, D.C."; 29 April 1951; no photo number; photographer unknown.

Two Coast Guard HO3Ss took part in the two-day American Helicopter Society Show in Washington on 28-29 April 1951. The helicopters, from Air Station Elizabeth City, performed water landings and rescue hoist demonstrations in an effort to publicize the Coast Guard's development of helicopters for search and rescue operations.

"The two Sikorsky helicopters that make up the Coast Guard Air Detachment, New Orleans, hover before landing at their home base, Naval Air Station, New Orleans. The Air Detachment was formed early in July and represent the first such unit assigned in the Crescent City."; 18 July 1955; Photo No. 071855-01; photographer unknown.

"Lieut. Stew. Graham, U.S.C.G. demonstrating the ease of leaving the rescue basket to the helicopter cabin. Rotary Wing Development Unit, Elizabeth City, N.C., 1947, rescue basket designed & perfected by personnel of the TWDU."; 1947; no photo number; photographer unknown.

Note the rescue basket as developed by the Coast Guard Rotary Wing Development Unit and the un-inflated flotation bag around the nose wheel landing strut. LT Stewart R. Graham was a pioneer in the development of the helicopter for the Coast Guard and Navy. He flew the Coast Guard's HO2S-1 (BuNo 75690) during tests for the Navy of the Hayes XCF "dipping" sonar in March of 1946. These tests proved the worth of "dipping" sonars mounted on helicopters. The test also involved the captured U-2513--which proved to be significantly more quiet than the U.S. fleet submarine used during the tests--leading the Navy to order the removal of all deck-mounted weaponry and material from every fleet submarine still in commission.

"HOIST PICK-UP DEMONSTRATION: A Coast Guard HO3S helicopter from the Coast Guard Air Station Elizabeth City, N.C., demonstrates the use of hydraulic hoist to pick up a man from the ground during the American Helicopter Society Show at Anacostia Naval Air Station, Washington, D.C., April 28-29, 1951. The helicopter equipment has proved invaluable in effecting rescues in areas inaccessible by any other means."; no photo number; April 1951; photographer unknown.

A demonstration of the rescue hoist in action. Note the rescue litter basket slung beneath the HO3S's fuselage.

"HO3S helicopter landed on stern of 310 foot cutter with tail rotor over the taffrail."; no date/photo number; photographer unknown.

A Coast Guard HO3S-1G, CG No. 230, after landing aboard the CGC *Chincoteague* (WPG-375) on 30 March 1950.

No caption/photo number; date & photographer unknown.

The emergency flotation gear mounted on the landing struts proved to be successful at keeping the HO3S and her two-man crew afloat.

Sources:

HO2S/HO3S (Sikorsky) File, USCG Historian's Office collection.

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